

**New, Continuation, Divisional, or Continuation-in-Part Application**  
**Under 37 C.F.R. Section 1.53(b)**

Attorney Docket No. BRI-00027

Express Mail Label No. EK 667 145 096 US

Date: October 19, 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Transmitted herewith for filing under 37 C.F.R. Section 1.53 (b) is a patent application for:

## "EXTERIOR MIRROR"

Identified by: ☐ First named inventor \_\_\_\_\_  
or ☒ Attorney Docket No. (see above) \_\_\_\_\_

### 1. Type of Application

☒ This application is a new (non-continuing) application.

[ ] This application is a [ ] continuation / [ ] divisional / [ ] continuation-in-part of prior application No. \_\_\_\_\_. Amend the specification by inserting before the first line, the sentence:

--This is a [continuation/division/continuation-in-part] of United States patent application No. \_\_\_\_\_, filed \_\_\_\_\_.--

[ ] The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied, is considered part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

If for some reason applicant has not requested a sufficient extension of time in the parent application, and/or has not paid a sufficient fee for any necessary response in the parent application and/or for the extension of time necessary to prevent the abandonment of the parent application prior to the filing of this application, please consider this as a Request for an Extension for the required time period and/or authorization to charge Deposit Account No. 500906 (Britax Intellectual Property Group) for any fee that may be due. **THIS FORM IS BEING FILED IN TRIPLICATE:** one copy for this application; one copy for use in connection with the Deposit Account (if applicable); and one copy for the above-mentioned parent application (if any extension of time is necessary).

## 2. Contents of Application

a. Specification of 17 pages:

[ ] a microfiche computer program (Appendix);

[ ] a nucleotide and/or amino acid sequence submission;

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☐ Because the enclosed application is in a non-English language, a verified English translation ☐ is enclosed ☐ will be filed.

☐ Cancel original claims \_\_\_\_\_ of the prior application before calculating the filing fee. (At least one original independent claim must be retained for filing date purposes.)

b. ☒ Drawings on 9 sheets;

c. ☒ A signed Oath/Declaration ☐ is enclosed / ☒ will be filed in accordance with 37 C.F.R. Section 1.53(f).

The enclosed Oath/Declaration is ☐ newly executed / ☐ a copy from a prior application under 37 C.F.R. Section 1.63(d) / ☐ accompanied by a statement requesting the deletion of person(s) not inventors in the continuing application.

d. **Fees**

<b>FILING FEE CALCULATION</b>	<b>Number Filed</b>	<b>Number Extra</b>	<b>Rate</b>	<b>Basic Fee \$690.00</b>
Total Claims	19 - 20 =	0 x	\$18.00 =	\$ 0
Independent Claims	2 - 3 =	0 x	\$78.00 =	\$ 0
Multiple Dependent Claim(s) Used .....			\$260.00 =	\$ 0
FILING FEE – NON-SMALL ENTITY .....				\$690.00
FILING FEE – SMALL ENTITY: Reduction by ½ .....				\$ 0
<input type="checkbox"/> Verified Statement under 37 C.F.R. Section 1.27 is enclosed.				
<input type="checkbox"/> Verified Statement filed in prior application.				
Assignment Recordal Fee (\$40.00) .....				\$ 0
37 C.F.R. Section 1.17(k) Fee (non-English application) .....				\$ 0
<b>TOTAL .....</b>				<b>\$690.00</b>

☐ A check is enclosed to cover the calculated fees. The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment, to Deposit Account No. \_\_\_\_\_ (\_\_\_\_\_). A duplicate copy of this document is enclosed.

☒ The calculated fees will be paid within the time allotted for completion of the filing requirements.

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- ☐ The calculated fees are to be charged to Deposit Account No. \_\_\_\_\_ (\_\_\_\_\_). The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment, to said Deposit Account. A duplicate copy of this document is enclosed.

### 3. Priority Information

- ☐ **Foreign Priority:** Priority based on \_\_\_\_\_(country) Application No. \_\_\_\_\_, filed \_\_\_\_\_, and \_\_\_\_\_(country) Application No. \_\_\_\_\_, filed \_\_\_\_\_, is claimed.
- ☐ A copy of the above referenced priority documents ☐ is enclosed / ☐ will be filed in due course, pursuant to 35 U.S.C. Section 119(a)-(d).
- ☒ **Provisional Application Priority:** Priority based on United States Provisional Application No. 60/160,390, filed October 19, 1999, is claimed under 35 U.S.C. Section 119(e).

### 4. Other Submissions

- ☐ A Preliminary Amendment is enclosed.
- ☐ An Information Disclosure Statement, \_\_\_\_\_ sheets of PTO Form 1449, and \_\_\_\_\_ patent(s)/publication(s)/document(s) are enclosed.
- ☒ A power of attorney
- ☒ is submitted ☒ with the new Oath/Declaration.
- ☐ is of record in the prior application and ☐ is in the original papers / ☐ a copy is enclosed.
- ☐ An Assignment of the invention
- ☐ is enclosed with a cover sheet pursuant to 37 C.F.R. Sections 3.11, 3.28 and 3.31.
- ☐ is of record in a prior application. The assignment is to \_\_\_\_\_, and is recorded at Reel \_\_\_\_\_, Frame(s) \_\_\_\_\_.
- ☐ An Establishment of Assignee's Right to Prosecute Application Under 37 C.F.R. Section 3.73(b), and Power of Attorney is enclosed.
- ☒ An Express Mailing Certificate is enclosed.
- ☒ Other: Return Receipt Postcard is enclosed.

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Attention is directed to the fact that the correspondence address for this application is:

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Respectfully submitted,

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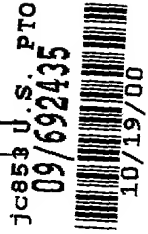
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October 19, 2000

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**EK667145096US**

Sir:

**EXPRESS MAILING CERTIFICATE**

Applicant: Mark Olijnyk, et al.

Serial No. (if any):

For: U.S. Patent Application  
"EXTERIOR MIRROR"

Docket: BRI-00027

Attorney: Philip R. Warn

**"Express Mail" Mailing Label Number . . . . . EK 667 145 096 US**

**Date of Deposit . . . . . October 19, 2000**

I hereby certify and verify that the accompanying Transmittal Letter (in triplicate);  
Patent Application (17 pages); Declaration and Power of Attorney; 9 Sheets of Drawings;  
and Postcard are being deposited with the United States Postal Service "Express Mail Post  
Office To Addressee" service under 37 C.F.R. 1.10 on the date indicated above and are  
addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Judith M. Zettle  
Signature of Person Mailing Documents

## EXTERIOR MIRROR

### Background of the Invention

#### 5    1. Technical Field

The present invention relates generally to a mirror assembly and more particularly to an exterior mirror assembly for a vehicle.

#### 10   2. Discussion

10       Due to constraints for shipping vehicles, especially those for large trucks, mirror assemblies for these vehicles are often times not designed with a heavy emphasis on their appearance or functionality. In shipping vehicles, it is frequently a constraint that the mirror assemblies can not extend outwardly of any other portion of the vehicle. Accordingly, mirror assemblies were  
15       typically designed as flat as possible so that they could be rotated backward to comply with the above shipping constraint.

Construction of the mirror assembly in this manner often resulted in a device having a generic appearance which did not compliment or accent the appearance of the vehicle in an aesthetically pleasing manner. Furthermore,  
20       it was not possible with such designs to utilize the mirror assembly for anything other than housing and supporting a reflective element.

### Summary of the Invention

25       It is one object of the present invention to provide a mirror assembly which pivots in a forward direction to retract the mirror housings inward from the edges of the vehicle body.

It is another object of the present invention to provide a mirror assembly which includes a housing assembly having a hinged closure member which covers an accessory cavity.

30       It is a further object of the present invention to provide a mirror assembly having an accessory attachment point which is adapted to fixedly but releasably accept a vehicle accessory.

It is yet another object of the present invention to provide a mirror assembly with a resilient bump strip coupled to the mirror housing assembly

to prevent scuffing and damage to the mirror assembly when the mirror assembly is brought into contact with an object.

It is a further object of the present invention to provide a mirror assembly having a housing assembly with improved rigidity.

5 It is yet another object of the present invention to provide a mirror assembly which may be fabricated in a modular manner to incorporate one or more selectively positionable mirror orientation mechanisms.

10 A mirror assembly having a housing assembly, a reflective element, a reflective element adjusting mechanism, an attachment assembly and a wire harness is provided. The housing assembly includes a housing which is filled with a structural foam to improve the rigidity of the mirror assembly, and a scalp which according to one embodiment, may be fixedly but removably coupled to the housing. Alternatively, the scalp may be hingedly coupled to the housing to permit access to a cavity formed therebetween. The cavity  
15 may be used for storing various articles, including a corded light, or may be used to house a switch unit for controlling various vehicle electrical components, such as a vehicle radio or various vehicle lights. A resilient bump strip may be coupled to the housing to protect the housing from scuffing or damage that results from contact with another object.

20 Housing assembly houses the reflective element adjusting mechanism and the reflective element. The attachment assembly is coupled to a vehicle at a first end and to the housing assembly at the second end. The attachment assembly preferably includes a pair of laterally extending arms which may be telescoped between a first and second positions to space the housing  
25 assembly further from or closer to the vehicle. The pair of laterally extending arms are selectively positionable at an operating position, as well as first and second rotational positions. The first rotational position places the housing against the side of the vehicle proximate a side window. Rotation of the arms in a forward direction places into the second rotational position places the  
30 housing inward of the sides of the vehicle above the vehicle fenders or hood.

Additional advantages and features of the present invention will become apparent from the subsequent description and the appended claims, taken in conjunction with the accompanying drawings.

**Brief Description of the Drawings**

Figure 1 is a rear perspective view of a portion of a vehicle equipped with a mirror assembly constructed in accordance with the teachings of the present invention;

5        Figure 2 is a front perspective view of the mirror assembly of Figure 1;

Figure 3 is a cross-sectional view of the mirror assembly of Figure 1 illustrating a portion of the first drive mechanism;

Figure 4 is a schematic illustration of a portion of the first drive mechanism;

10       Figure 5A is an cross-sectional view taken along the line 5A - 5A of Figure 3;

Figure 5B is an cross-sectional view taken along the line 5B - 5B of Figure 3;

15       Figure 5C is an cross-sectional view taken along the line 5C - 5C of Figure 3;

Figure 6 is a cross-sectional view of the mirror assembly of Figure 1 illustrating a portion of the second drive mechanism;

Figure 7 is a top view of a portion of the vehicle of Figure 1 illustrating the mirror assembly in several positions;

20       Figure 8a is a front perspective of a mirror assembly similar to that of Figure 1 illustrating the incorporation of a turn indicator, an accessory attachment point and a bump strip;

25       Figure 8b is a front perspective of a mirror assembly similar to that of Figure 1 illustrating the incorporation of an antenna attachment point to the sail portion;

Figure 9 is a front perspective of a mirror assembly similar to that of Figure 1 illustrating the incorporation of a marker lamp, a bump strip and a spot light;

30       Figure 10 is a front perspective of a mirror assembly similar to that of Figure 1 illustrating the incorporation of a spoiler;

Figure 11 is a schematic diagram of the mirror assembly of Figure 10 illustrating the function of the spoilers;

35       Figure 12 is a perspective view of a portion of a mirror assembly similar to that of Figure 1 illustrating the incorporation of a power port into the sail portion;



Figure 13 is a perspective front view of a mirror assembly similar to that of Figure 1 but illustrating a hinged scalp;

Figure 14 is a perspective front view of a mirror assembly similar to Figure 13 illustrating a compartment for a corded light;

5        Figure 15 is a perspective front view of a mirror assembly similar to Figure 13 but illustrating a switching unit; and

Figure 16 is a perspective rear view of a mirror assembly similar to that of Figure 1 illustrating the incorporation of a speaker into the housing.

## 10    **Detailed Description of the Preferred Embodiment**

With reference to Figures 1 through 6 of the drawings, a mirror assembly constructed in accordance with the teachings of the present invention is generally indicated by reference numeral 10 and shown in operative association with a vehicle 12. Although the particular vehicle  
15    illustrated is a pick-up truck, it will be understood that the teachings of the present invention have applicability to other types of vehicles, and as such, will not be limited in application to pick-up trucks. Furthermore, although mirror assembly 10 is illustrated and described herein as an exterior drivers side rear view mirror which enables the vehicle operator to view an area  
20    beside and rearward of vehicle 12, it will be understood that a passengers side rear view mirror may be similarly constructed.

Mirror assembly 10 includes a housing assembly 14, a reflective element 16, a reflective element adjusting means (not shown), an attachment assembly 20, a first drive mechanism 22, a second drive mechanism 24 and a  
25    wire harness 26. Wire harness 26 couples the vehicle electrical system to each of the various electrical devices in mirror assembly 10. Housing assembly 14 includes a housing 30 and a scalp 32. Housing 30 is preferably unitarily formed from a molded plastic material and includes a conventional attaching means which is employed to fixedly but removably couple the  
30    reflective element adjusting means to housing 30. Housing 30 also houses and supports reflective element 16.

With brief reference to Figures 8a and 9, a bump strip 34 formed from a soft and resilient material such as rubber or vinyl, may be included on one or more of the exterior surfaces of housing 30 to prevent housing 30 from being  
35    scuffed or damaged in the event that it contacts an object. With specific

reference to Figure 8a, bump strip 34 may be contoured or styled in a decorative manner which enhances the appearance of mirror assembly 10. Bump strip 34 preferably covers the forward most and outward most points of housing 30 to ensure that bump strip 34 rather than housing 30 will contact  
5 objects first. Bump strip 34 is preferably coupled to housing 30 and/or scalp 32 via double-sided adhesive tape.

Referring back to Figures 1 and 2, scalp 32 is also preferably unitarily formed from a molded plastic material. Preferably, a plurality of conventional snap-fasteners are molded into housing 30 and scalp 32 which permits them  
10 to be fixedly but removably coupled to one another without the use of threaded fasteners. Alternatively, scalp 32 may be fixedly coupled to housing 30 with a double-sided adhesive tape. With additional reference to Figure 3, housing 30 and scalp 32 are shown to cooperate to form a cavity 36 which is completely filled with a structural foam 38. Structural foam 38 is preferably a  
15 closed-cell polyurethane foam.

Due to the relative ease with which scalp 32 may be coupled to housing 30, scalp 32 may be configured in a manner which enhances the decorative appearance of mirror assembly. For example, scalp 32 may be molded from a colored plastic or painted so as to either match or accent the  
20 color of vehicle 12. As another example, a decorative design may be molded into the exterior surface 40 of scalp 32.

The reflective element adjusting means is fixedly but removably coupled to housing 30. Preferably, the reflective element adjusting means is an electronically or manually controlled adjusting mechanism that is well  
25 known in the art and which permits the position of the reflective element 16 to be adjusted from the passenger compartment of vehicle 12. Alternatively, the reflective element adjusting means is a manually controlled adjusting mechanism that is well known in the art which is actuated by a force directed to reflective element 16.

Reflective element 16 is preferably fixedly but removably coupled to the reflective element adjusting means, and as such is selectively positionable relative to housing 30. In the preferred embodiments of the present invention, reflective element 16 is fabricated from mirror glass which may be heated  
35 and/or may include other characteristics such as electrochromic properties and hydrophobic or hydrophilic coatings. Reflective element 16 may also be

constructed in a manner which permits it to be readily removed from the reflective element adjusting means for servicing of mirror assembly 10 and/or and replacement of reflective element 16.

Housing assembly 14 is coupled to attachment assembly 20. In the particular embodiment illustrated, attachment assembly 20 includes a sail portion 50, first and second arms 52 and 54, respectively, and an approach light 56. Sail portion 50 is attached to vehicle 12 via threaded posts or other conventional connectors. A seal is typically interposed between sail portion 50 and vehicle 12 to isolate the interior of vehicle 12 from moisture, dirt and noise.

Each of the first and second arms 52 and 54 include a first laterally extending structure 60 and a second laterally extending structure 62. The first and second laterally extending structures 60 and 62 may be moved in an axial direction relative to one another to permit first and second arms 52 and 54 to telescope inwardly toward vehicle 12 or outwardly therefrom. In the particular embodiment illustrated, first laterally extending structure 60 is fixedly coupled to housing assembly 14 and second laterally extending structure 62 is coupled to sail portion 50.

With reference to Figure 3, each of the first laterally extending structures 60 preferably includes a first cover member 70 and a first tubular member 72 and each of the second laterally extending structures 62 includes a second cover member 74 and a second tubular member 76. The first and second tubular members 72 and 76 are preferably formed at least partially from a square or rectangular tubing.

First tubular member 72 is sized to glidingly receive second tubular member 76. The interior surface of second cover member 74 is spaced apart from second tubular member 76 to permit sliding engagement between first and second tubular members 72 and 76. The interior surface of first cover member 70 is spaced apart from first tubular member 72 to permit sliding engagement between first and second cover members 70 and 74. As the function of the first and second cover members 70 and 74 is primarily cosmetic, they may have cross-sections that are round, square, rectangular, elliptical or any other desired shape.

Each of the second laterally extending structures 62 is disposed at least partially within a respective first laterally extending structure 60. The first

and second laterally extending structures 60 and 62 may be moved in an axial direction relative to one another to permit first and second arms 52 and 54 to telescope inwardly toward vehicle 12 or outwardly therefrom. A pair of first rollers 80 are coupled to second tubular member 76 and extend through slots 82 formed in its rear sidewall 84. First rollers 80 are journally supported by a pin 86 for rotation about an axes that are perpendicular to the axis of the first and second arms 52 and 54. A second roller 90 is coupled to an opposite side of second tubular member 76 and extends through a slot 92 formed in its front sidewall 94. Second roller 90 is also journally supported by a pin 96 for rotation about another axis that is perpendicular to the axis of the first and second arms 52 and 54. Pin 96 is disposed in a slot 98 formed in second tubular member 76. A spring 100 is coupled to second tubular member 76 and is operable for urging pin 96 in a direction away from the first rollers 80 and against the inner surface of the first tubular member 72. Each set of first and second rollers 80 and 90 cooperate to control relative movement between the first and second laterally extending structures 60 and 62 in non-axial directions. Structural foam 38 retains first laterally extending structure 60 to housing assembly 14 while providing structural support to inhibit the flexing of the first and second arms 52 and 54 relative to one another.

First drive mechanism 22 is operable for telescoping first and second arms 52 and 54 between an extended position and a retracted position. First drive mechanism 22 may be configured in a manner similar to that disclosed in commonly assigned Australian Provisional Patent Application Serial No. PP8619 filed February 9, 1999 entitled "Means For Extending Or Retracting Telescopic Tubes", which is hereby incorporated by reference as if fully set forth herein.

Alternatively, as shown in Figure 3 through 5C, first drive mechanism 22 is illustrated as including a motor assembly 110, an intermediate worm structure 112 and upper and lower worm structures 114 and 116. Motor assembly 110 includes a conventional reversible dc motor 120 and a drive worm 122 which is coupled for rotation with the output shaft of motor 120. The housing of motor 120 is fixedly coupled to housing assembly and the output shaft of motor 120 is oriented along an axis parallel to the axes of the first and second arms 52 and 54.

Intermediate worm structure 112 includes an intermediate worm gear 126 and first and second intermediate worm drives 128 and 130. Intermediate worm structure 112 is coupled to housing assembly 14 for rotation about an axis perpendicular to the axis of the output shaft of motor 120 such that intermediate worm gear 126 meshingly engages drive worm 122.

Upper and lower worm structures 114 and 116 are similar in construction, and as such, only upper worm structure 114 will be discussed in detail. Upper worm structure 114 includes a worm gear 136, a lead screw 138 and a drive member 140. Worm gear 136 meshingly engages first intermediate worm drive 128. A ball bearing 144 and a preload spring assembly 146 cooperate to align worm gear 136 to first intermediate worm drive 128. Worm gear 136 and lead screw 138 are coupled for rotation with one another. Lead screw 138 includes an externally threaded surface 148 which is rotatably supported by first tubular member 72 along the axis parallel to the axis of first arm 52. Drive member 140 includes an internally threaded surface (not shown) which meshingly engages the externally threaded surface 148 of lead screw 138. Drive member 140 is fixedly coupled to the upper and lower surfaces of second tubular member 76.

Rotation of the output shaft of motor 120 therefore causes lead screws 138 to rotate in a corresponding direction which exerts a force onto the drive members 140 to cause the first tubular members 72 to telescope inwardly to or outwardly from their corresponding second tubular members 76.

Second drive mechanism 24 is illustrated in Figure 6 as including a drive and clutch system 160 which are similar to the drive and clutch system disclosed in commonly assigned co-pending U.S. Patent Application Serial No. 09/085,708 entitled "Mirror Parking System", which is hereby incorporated by reference as if fully set forth herein. Accordingly, this aspect of mirror assembly 10 will not be discussed in detail, other than noting that a powered worm 162 meshingly engages a worm gear 164.

Unlike the above reference drive mechanism, second drive mechanism 24 is shown to include a shaft 170 which is fixed for rotation with worm gear 164. First and second pinions 172 and 174, respectively, are coupled to either end of shaft 170 and fixed for rotation thereon. First and second pinions 172 and 174 are meshingly engaged with a respective drive gear 176

which is supported for rotation about a pivot pin 178. Drive gear 176a is coupled for rotation with first arm 52 and drive gear 176b is coupled for rotation with second arm 54. Accordingly, rotation of powered worm 162 is operable for rotating shaft 170 to cause first and second arms 52 and 54 to rotate simultaneously in a desired direction.

First and second drive mechanisms 22 and 24 may be coupled to a programmable controller 200 which permits the vehicle operator to store a given mirror orientation to memory. The mirror orientation may include information on the position of reflective element 16, as well as the telescopic and rotational positions of housing assembly 14 relative to sail portion 50. Retrieval of the stored mirror orientation causes controller to actuate the first and second drive mechanisms 22 and 24, and the reflective element adjusting means as necessary to adjust the reflective element to the stored mirror orientation.

Alternatively, one or both of the power drive mechanisms may be omitted completely thereby rendering mirror assembly 10 fixing the position of housing assembly 14 relative to vehicle 12. Also alternatively, one or both of the power drive mechanisms may be omitted with a manually actuated mechanism substituted therefor. To control the telescoping movement, a plurality of friction shoes are incorporated into the first and second arms 52 and 54 to provide resistance to their telescopic movement during the operation of vehicle 12. Similarly, to control rotational movement of housing assembly 14, attachment assembly 20 may be fitted with a detent mechanism having a plurality of detents which fixedly but releasably restrain first and second arms 52 and 54 in a desired orientation.

As illustrated in Figure 7, mirror assembly 10 is selectively positionable between a rearward retracted position 190, an operational position 192 and a forward-retracted position 194. Mirror assembly 10 is conventionally maintained in the operational position 192 until such time as vehicle 12 is required to approach an object near one or more of its lateral sides. At such time, mirror assembly 10 may then be rotated forward or rearward. Placement of mirror assembly 10 into the rearward retracted position 190 positions housing assembly 14 against the lateral side of vehicle 12 such that housing assembly 14 is proximate the side window. Positioning mirror assembly 10 in this manner may be best suited where vehicle 12 is being

operated in a forward direction and it is desirable to protect the mirror assembly from forward impacts, such as when traveling through overgrown trails. This position, however, tends to interfere with the vehicle occupant's ability to move their hands or see through the side window of vehicle, as when  
5 at automatic teller machines or the drive-through windows of fast-food restaurants.

In situations such as this, mirror assembly 10 may advantageously be oriented to its forward-rotated position 194 to substantially clear the area proximate the side window of the vehicle 12. This position is also  
10 advantageous in that the housing assembly 14 is positioned substantially inward of the lateral side of vehicle 12, thereby permitting housing assembly 14 to be relatively deep in comparison to similar mirrors which can only be rotated to a rearward rotated position 190. Consequently, housing 30 and scalp 32 need not be designed in a relatively flat manner, but may be  
15 extended to address aesthetic and aerodynamic issues.

Returning to Figures 1 and 2, approach light 56 includes a controller 200, a reflector housing 202 and a lens 204 and a plurality of lamps 206. Illumination of lamp 206a causes an area adjacent vehicle 12 and forward of mirror assembly 10 to be illuminated. Illumination of lamp 206b causes an  
20 area adjacent vehicle 12 and below mirror assembly to be illuminated. Illumination of lamp 206c causes an area adjacent vehicle 12 and rearward of mirror assembly 10 to be illuminated. Illumination of lamp 206d causes an area lateral to mirror assembly 10 to be illuminated. Controller 200 is operable for selectively illuminating one or more of the lamps 206 upon the  
25 occurrence of a predetermined condition. For example, actuation of a remote keyless entry device or a power lock switch on one of the vehicle doors causes all of the lamps to illuminate so as to illuminate an area around vehicle 12 to aid in the ingress to and egress from vehicle 12. Actuation of the vehicle turn signal lever to turn left, for example, causes lamp 206a to  
30 illuminate to provide the vehicle operator with an illuminated view of the area to which vehicle 12 is being turned. Placement of the vehicle gear selector into a reverse gear ratio causes lamp 206c to illuminate, providing the vehicle operator with an illuminated view of an area to the side and behind vehicle 12. Controller 200 preferably includes a remote light switch 208 which permits  
35 one or more of the lamps 206 to be illuminated as desired.

Alternatively, approach light 56 may be configured in a manner similar to that disclosed in commonly assigned U.S. Provisional Patent to Andrew J. Assinder entitled "Exterior Mirror Having An Attachment Member Including An Approach Light" which is hereby incorporated by reference as if fully set forth herein.

Other light devices may similarly be incorporated into mirror assembly 10, either in addition to approach light 56 or in substitution thereof. A first example is illustrated in Figure 8 where a turn indicator 210 is shown coupled to housing 30. Turn indicator 210 may be placed on mirror assembly 10 so as to face in a rearward direction, a sideward direction or both a rearward and a sideward direction. Turn indicator 210 is conventional in its operation in that its actuation is controlled by the vehicle turn signal lever.

A second example is illustrated in Figure 9 where a side marker 212 is coupled to housing 30. Side marker 212 may be conventionally operated to illuminate when the vehicle parking lights or vehicle head lights are illuminated. Side marker 212 may also be operated to illuminate when vehicle 12 is locked or unlocked and thereafter turned off when vehicle 12 is started or after a predetermined time.

A third example is further illustrated in Figure 9 wherein mirror assembly 10 is shown to include a spot light 214. Spot light 214 is movably coupled to attachment assembly 20 and located between the first and second arms 52 and 54. Spot light 214 includes a first portion 216 which is fixedly coupled to scalp 50 and a second portion 218 which is selectively positionable relative to first portion 216 via a control mechanism (not shown) which is preferably actuatable from the interior of vehicle 12. The control mechanism may be a manual handle or may be electronically controlled. Preferably, the second portion is gimbaled to the first portion, permitting second portion 218 to focus light in a predetermined area.

Attachment assembly 20 may also be fitted with various other accessories, such as a spoiler. In Figure 10, attachment assembly 20 is shown to be fitted with a first spoiler 230 and a second spoiler 232. First spoiler 230 is coupled to the first laterally extending structures 60 so as to be fixed in relation to housing 30. Second spoiler 232 is coupled to the second laterally extending structures 62 so as to be fixed in relation to the vehicle side window. As shown in Figure 11, first spoiler 230 is configured to deflect a first



air flow 236 across reflective element 16 to clear its exterior surface of water and/or contamination. Similarly, second spoiler 232 is configured to deflect a second air flow 238 across the side window to clear it of water and/or contamination. First and second spoilers 230 and 232 may be integrally  
5 formed into housing 30 and sail portion 50, respectively, or may separately manufactured permitting them to be supplied to consumers as an after-market product.

An accessory attachment point 240 may be provided in attachment assembly 20 or housing assembly 14. As illustrated in Figure 8a, accessory  
10 attachment point 240 is integrated into sail portion 50 and permits various accessories, such as flags 242 and pennants of various collegiate or professional sports teams to be fixedly but removably coupled to mirror assembly 10.

Similarly, as illustrated in Figure 8b, an antenna attachment point 246  
15 may also be integrated into mirror assembly 10. Antenna attachment point 246 permits an antenna 248 for one or more of the vehicle radio, a wireless phone and a remote keyless entry device to be coupled to mirror assembly 10. This embodiment is advantageous in that it provides an antenna connection for the desired device without forming a hole in the sheet metal  
20 body of vehicle 12. Alternatively, as shown in Figure 16, antenna 248 may be completely disposed within cavity 36 in housing assembly 14. In the particular embodiment illustrated, antenna 248a is coupled to the vehicle radio, antenna 248b is coupled to a wireless phone and antenna 248c is operable for receiving a remote unlocking/locking signal which is typically generated by a  
25 remote keyless entry device.

As illustrated in Figure 12, another feature that may be integrated into mirror assembly 10 is a power port 250 which uses the electrical system of vehicle 12 to power various accessories, such as hand-held spot lights. A  
30 plug assembly 252 having a resilient seal 254 is used to close the cavity of power port 250 to prevent infiltration of water and dirt therein.

Figures 13 through 15 illustrate yet another alternative construction of mirror assembly 10. Scalp 32 is shown to be hingedly coupled to housing 30, permitting scalp 32 to be pivoted between a closed position substantially closing the open end of housing 30, and an open position substantially  
35 clearing the open end of housing 30. A cavity 260 is formed between scalp

32 and housing 30 which may be used to conceal a power port 250 or to store various items, such as replacement lamps 262, fuses 264 and/or tools such as a pressure gauge 266 and screwdrivers 268. A lock mechanism 270 is incorporated into scalp 32 which is positionable in a locked condition inhibiting the movement of scalp 32 from the closed position to the open position, and an unlocked condition permitting the movement of scalp 32 from the closed position to the open position.

As illustrated in Figure 14, cavity 260 may be used for storing a corded lamp 280. Corded lamp 280 includes a housing 282, a lens 284, a lamp 286 and a cord portion 288. Cord portion 288 is electrically coupled to the electrical system of vehicle 12, permitting corded lamp 280 to be moved relative to mirror assembly 10 to provide light to a remote area, as when changing a tire or when examining the engine compartment or bottom side of vehicle 12.

As illustrated in Figure 15, a switching unit 290 may additionally or alternatively be placed into cavity 260. Switching unit 290 is coupled to various vehicle electrical devices to permit them to be remotely controlled from outside vehicle 12. In the example provided, switching unit 290 includes a set of first controls 292 which are operable for remotely controlling the vehicle radio and a set of second controls 294 which are operable for remotely controlling various vehicle lights. First controls 292 may be actuated to turn the vehicle radio on or off, select a signal medium (e.g., radio signal, cassette tape, compact disc) or adjust various settings such as playback volume, balance, tone. Preferably, first controls 292 are identical in configuration and function to any controls for the vehicle radio which are contained in the vehicle interior. Second controls 294 includes a plurality of switches which may be actuated, either individually or in combination, to illuminate various vehicle lamps. Second controls 294 permits, for example, the vehicle hazard lights to be actuated from the exterior of vehicle 12 as well as an auxiliary light to be illuminated to permit an area of vehicle 12 to be illuminated, as when changing a tire.

One or more audio speakers may also be integrated into mirror assembly 10. As illustrated in Figure 16, an audio speaker 300 is integrated into housing 30. Audio speaker 300 may be coupled to the vehicle radio to permit the playback of music and other programs outside of vehicle 12. Audio

speaker 300 may additionally or alternatively be coupled to a microphone inside vehicle 12, permitting the vehicle occupants to broadcast messages to persons outside vehicle 12. Audio speaker 300 may additionally or alternatively be configured as a siren to produce a warning signal to alert persons to the presence of vehicle 12. Also alternatively, audio speaker 300 may be integrated into attachment assembly 20 in sail portion 50 or to a bracket (not shown) which is coupled to first and second arms 52 and 54.

While the invention has been described in the specification and illustrated in the drawings with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention as defined herein. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment illustrated by the drawings and described in the specification as the best mode presently contemplated for carrying out this invention.

**We Claim:**

1. An exterior mirror for a vehicle comprising:  
a mirror housing assembly including a reflective element normally  
facing in a direction for viewing rearward; and

5 a first folding mechanism which provides for folding of the mirror in a  
forward direction for reducing the overall width dimension of the vehicle.

2. The exterior mirror of claim 1 wherein said mirror housing is  
substantially ahead of a vehicle windshield when folded in said forward  
10 direction.

3. The exterior mirror of claim 1 wherein said mirror is laterally  
extendable for clearing the windshield.

15 4. The exterior mirror of claim 3 further comprising a vehicle  
attachment assembly and first and second arms for attaching the mirror  
housing to the attachment assembly; and

a mechanism for extending and retracting said arms for extending and  
retracting the mirror housing.

20 5. The mirror of claim 1 wherein the mirror includes a bump strip on  
the outer peripheral side.

25 6. The mirror of claim 1 wherein the attachment member is a sail  
portion.

7. The mirror of claim 6 wherein a remote controllable spot light is  
configured in the sail portion.

30 8. The mirror of claim 6 further comprising a plurality of lights in the  
sail portion.

9. The mirror of claim 6 wherein said portion further includes an  
antenna mount.

10. The mirror of claim 6 wherein the sail portion includes a microphone/speaker.

5 11. The mirror of claim 6 wherein said sail further includes a power receptacle.

12. The mirror of claim 5 further comprising a spoiler member attached to the arm.

10 13. The mirror of claim 6 wherein an accessory attachment point is provided on said sail.

14. An exterior mirror for a vehicle comprising:  
a housing having a mirror on a first portion and a rear portion having a  
15 storage cavity therein.

15. The exterior mirror of claim 4 wherein said rear portion is a door for opening to reveal the contents of the cavity.

20 16. The exterior mirror of claim 15 wherein said door includes a lock.

17. The exterior mirror of claim 9 wherein the housing is filled with a foam material for improving structural rigidity of the mirror.

25 18. The exterior mirror of claim 1 wherein the mirror is foldable to a second position adjacent a side window.

19. The exterior mirror of claim 1 wherein a control module is used to control the folding and extension of the mirror, said control module having  
30 memory for positioning the mirror surface, and extension and folding positions in a predetermined manner.

**ABSTRACT**

**Exterior Mirror**

An exterior mirror for a vehicle, which is forward foldable for storage and shipment of a vehicle. The mirror may also fold to the rear and includes

5 lights and accessories in the sail and the mirror casing.

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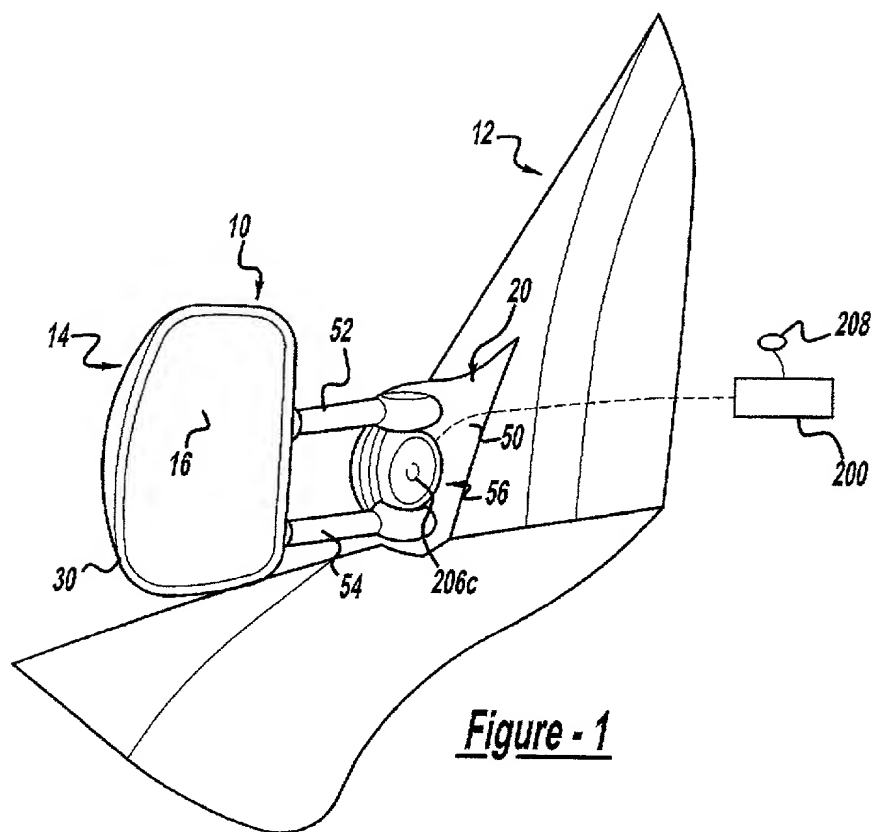


Figure - 1

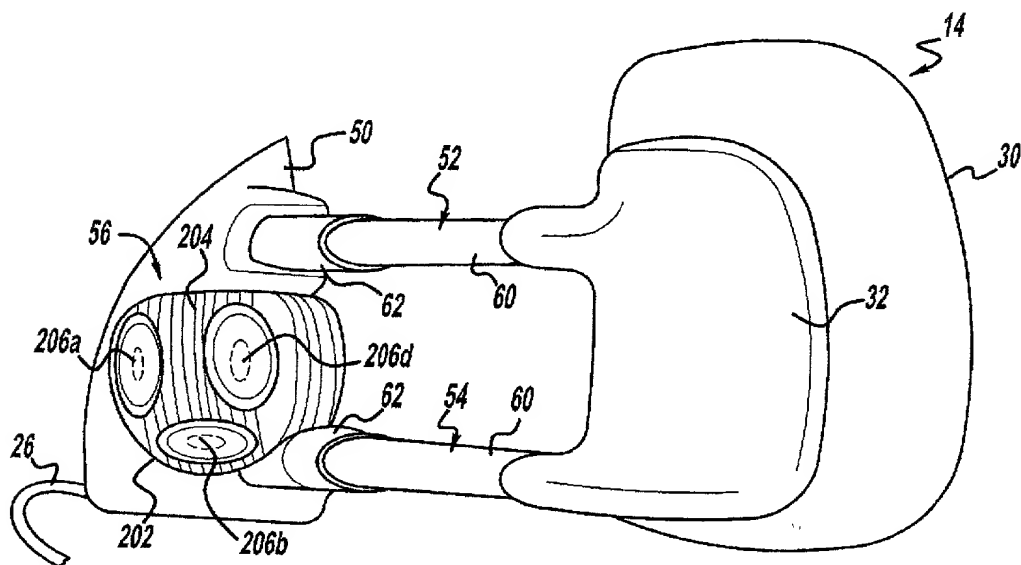
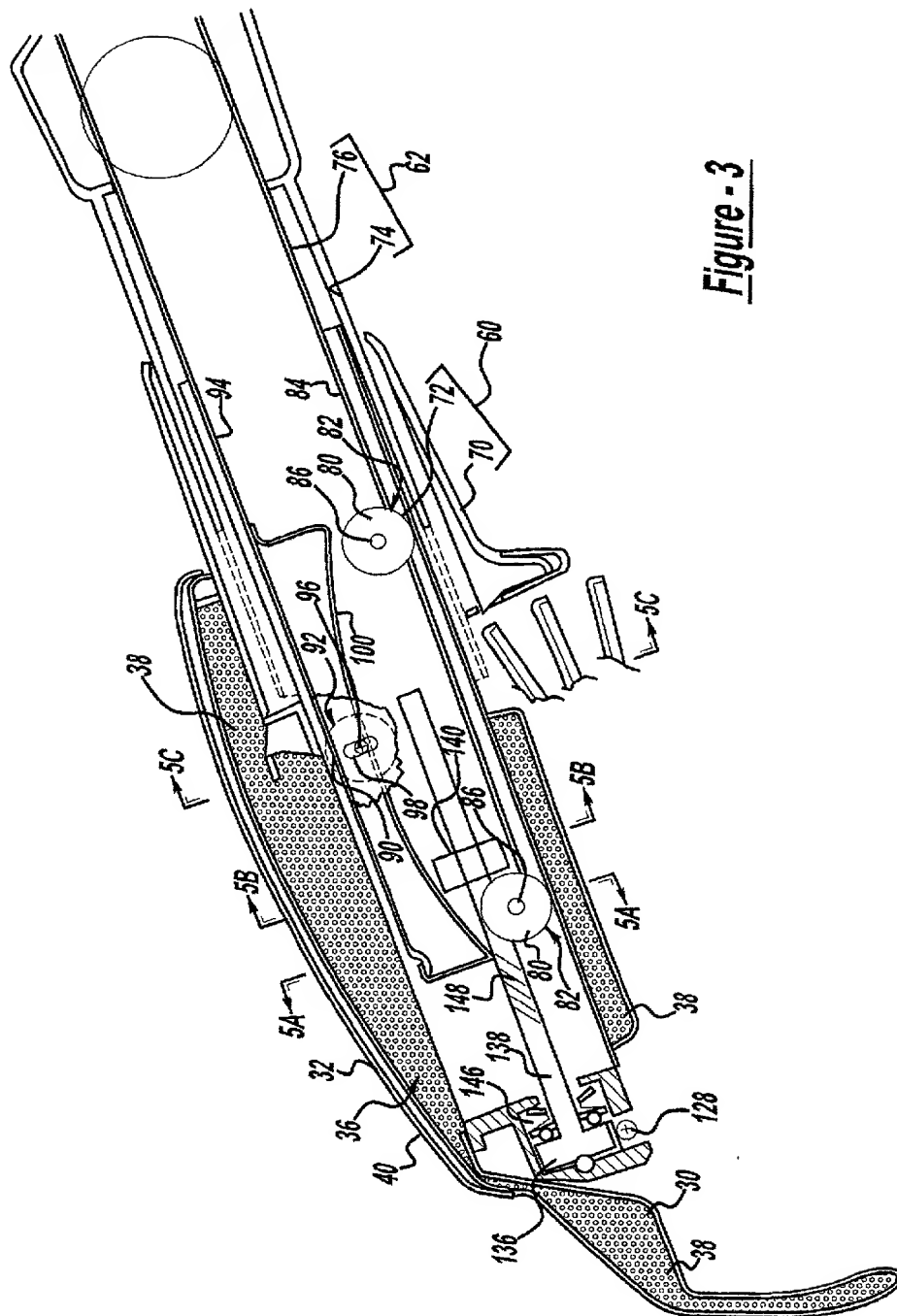


Figure - 2



**Figure - 3**



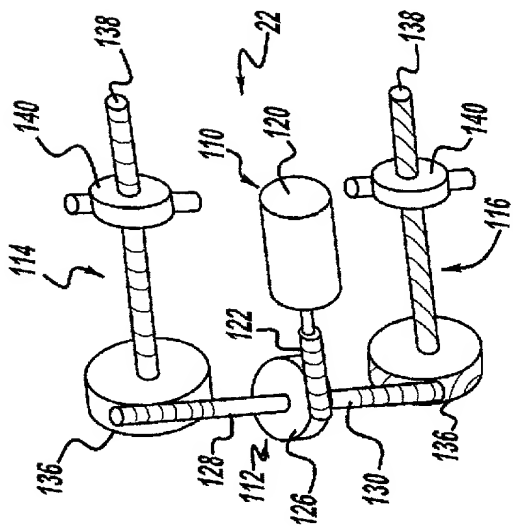


Figure - 4

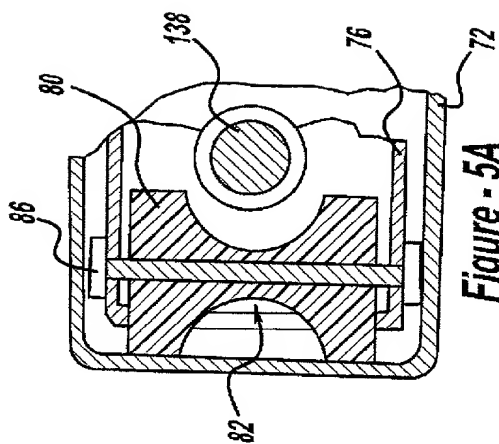


Figure - 5A

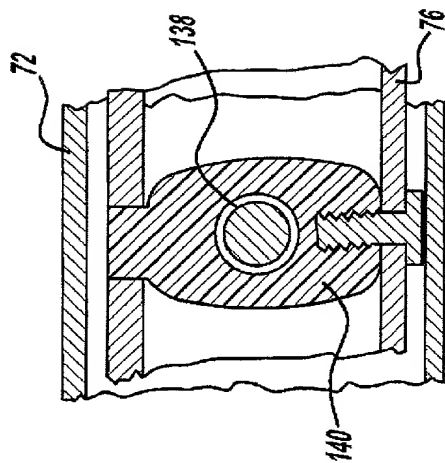


Figure - 5C

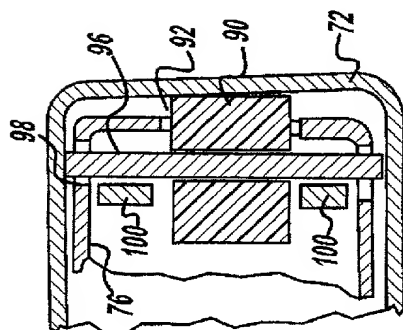


Figure - 5B

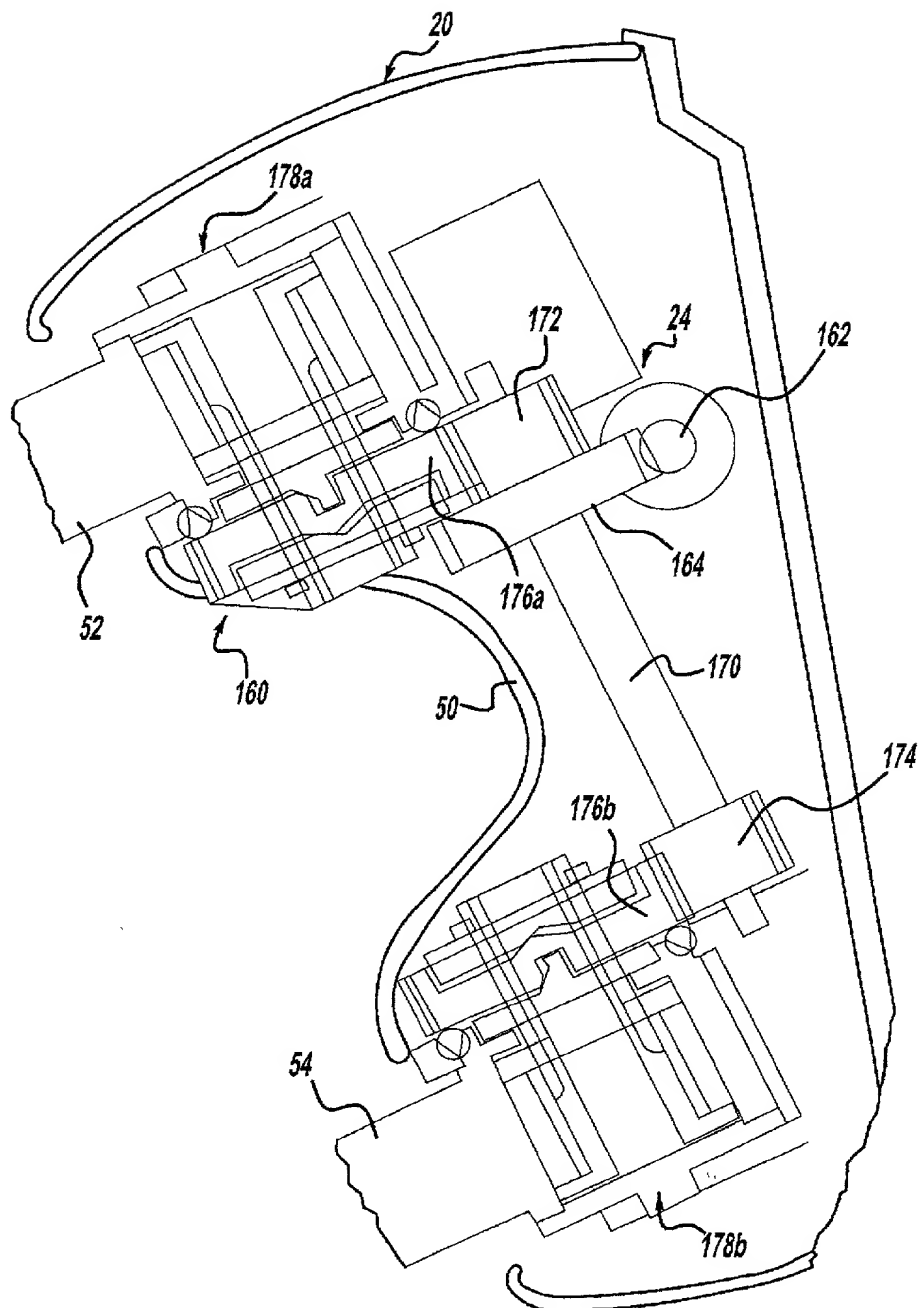


Figure - 6

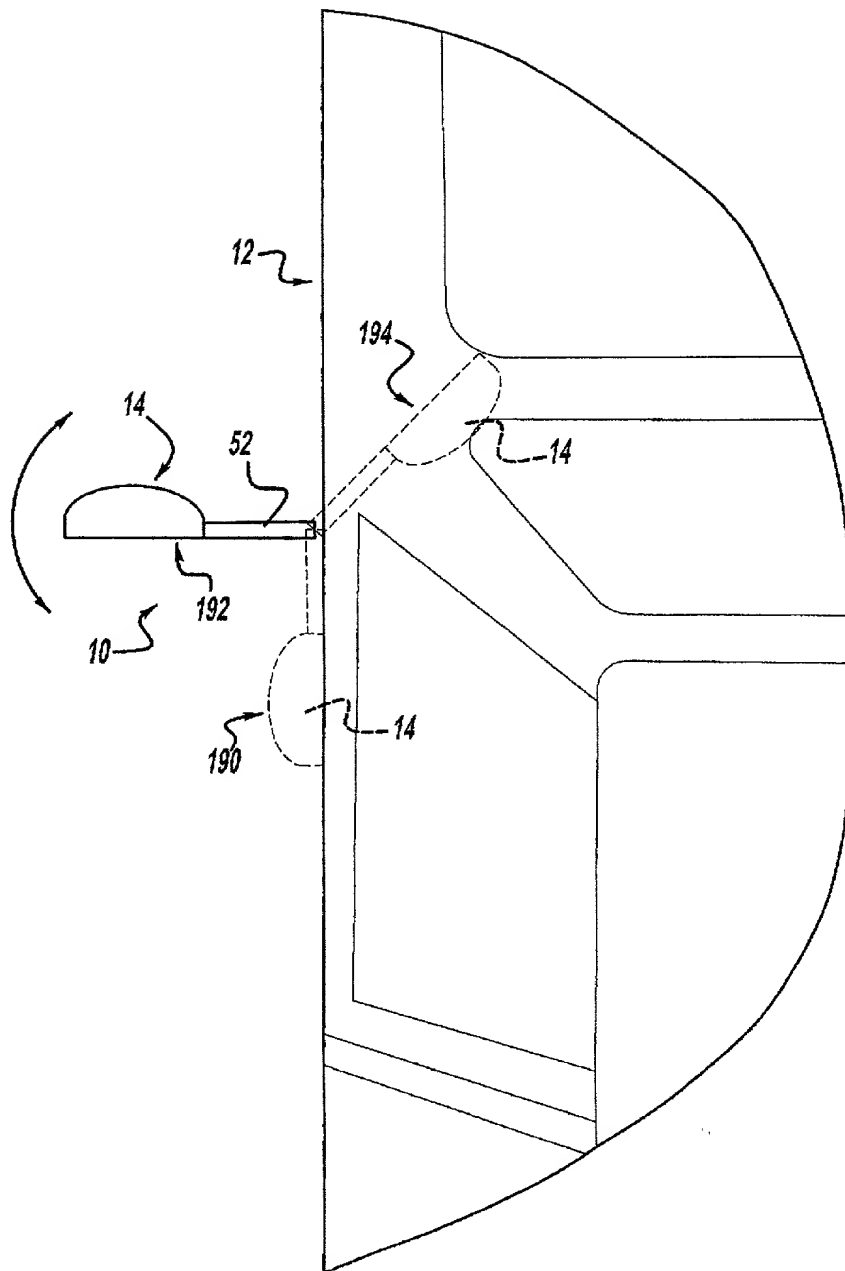


Figure - 7

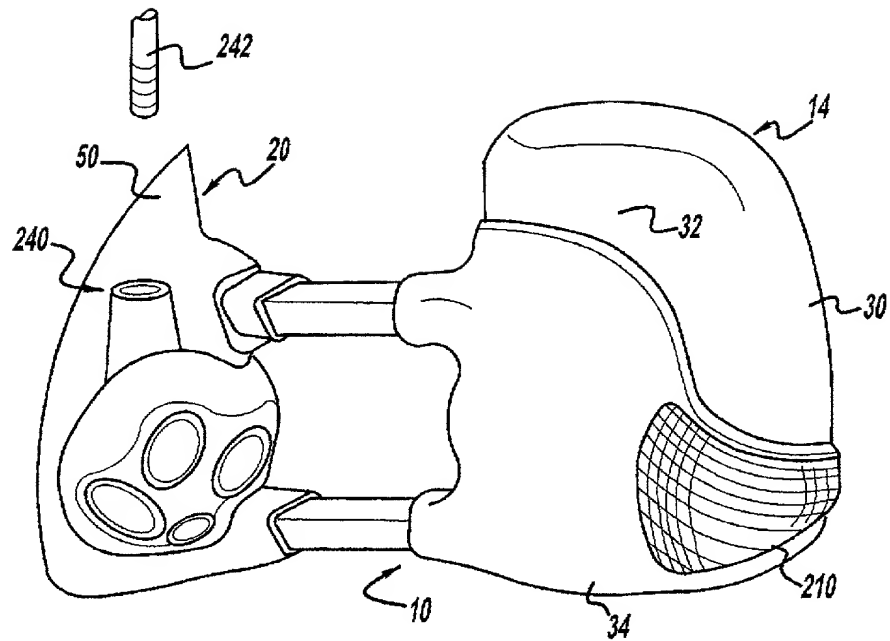


Figure - 8A

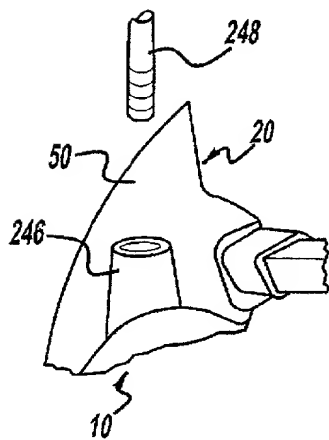


Figure - 8B

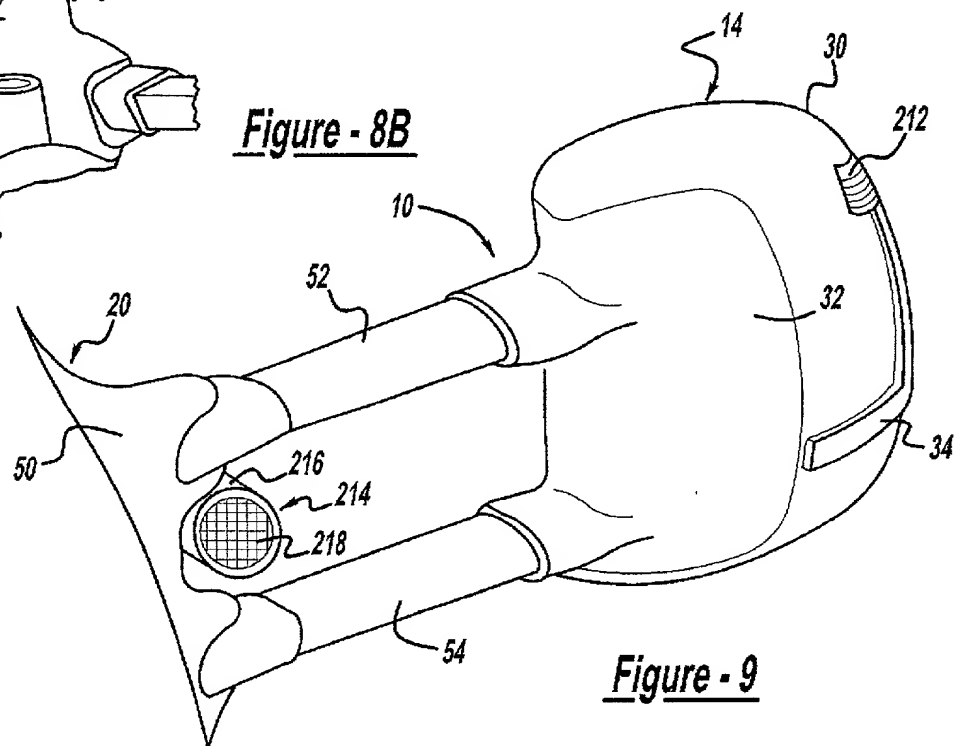
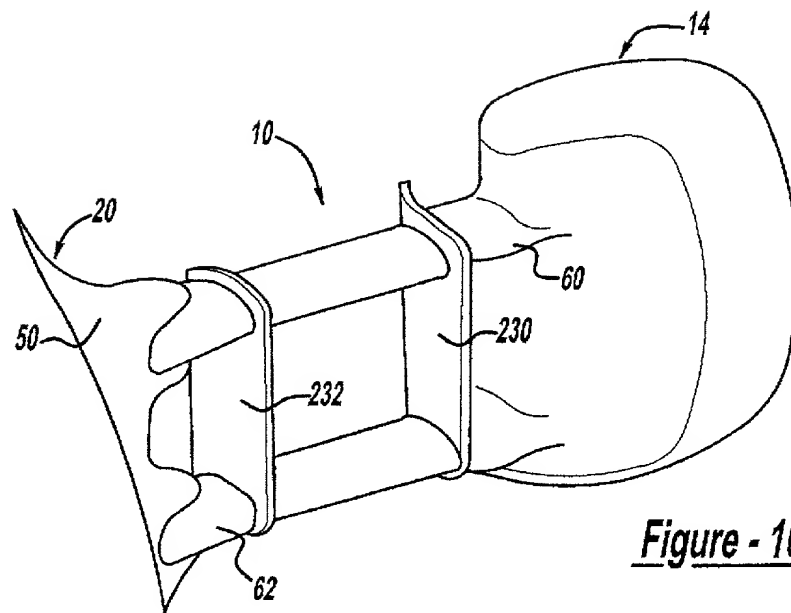
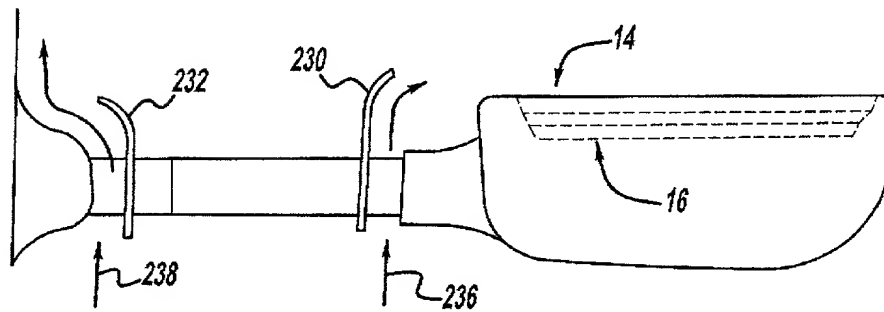


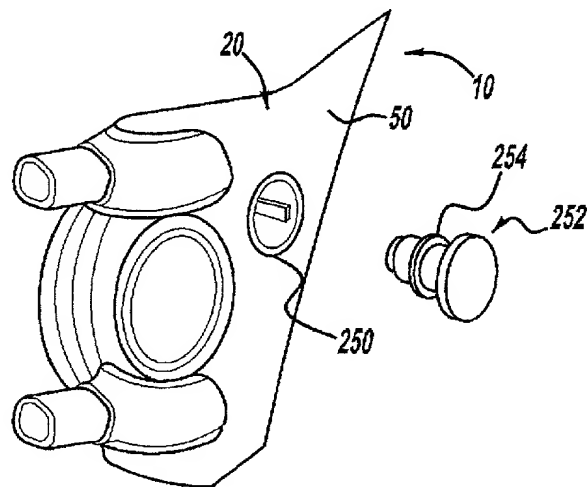
Figure - 9



**Figure - 10**



**Figure - 11**



**Figure - 12**

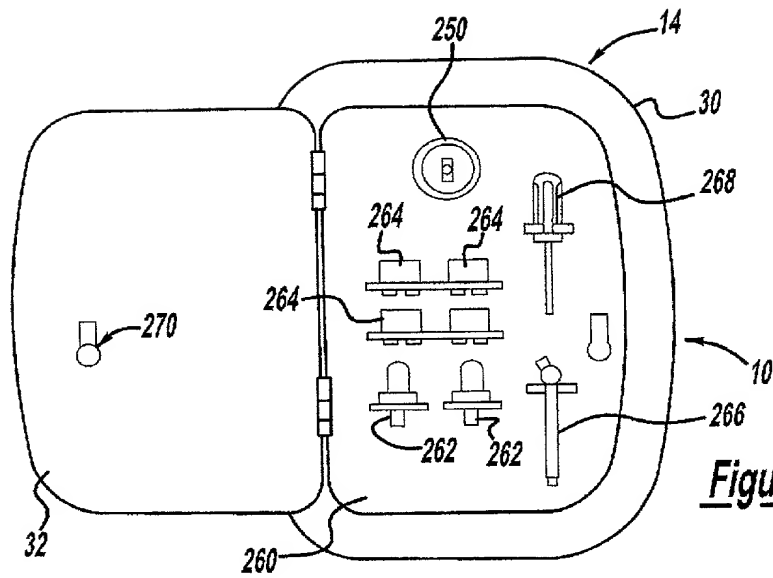


Figure - 13

**Figure - 14**

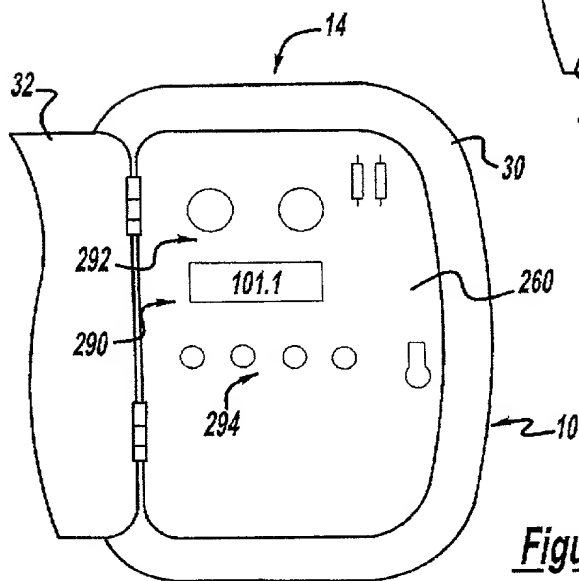
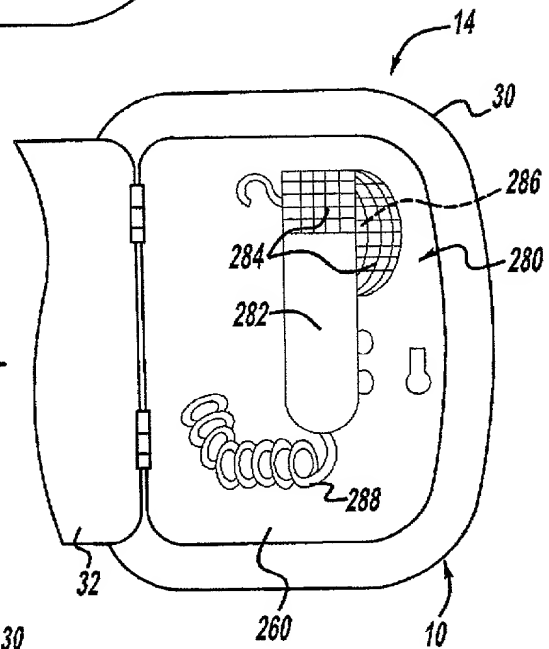


Figure - 15

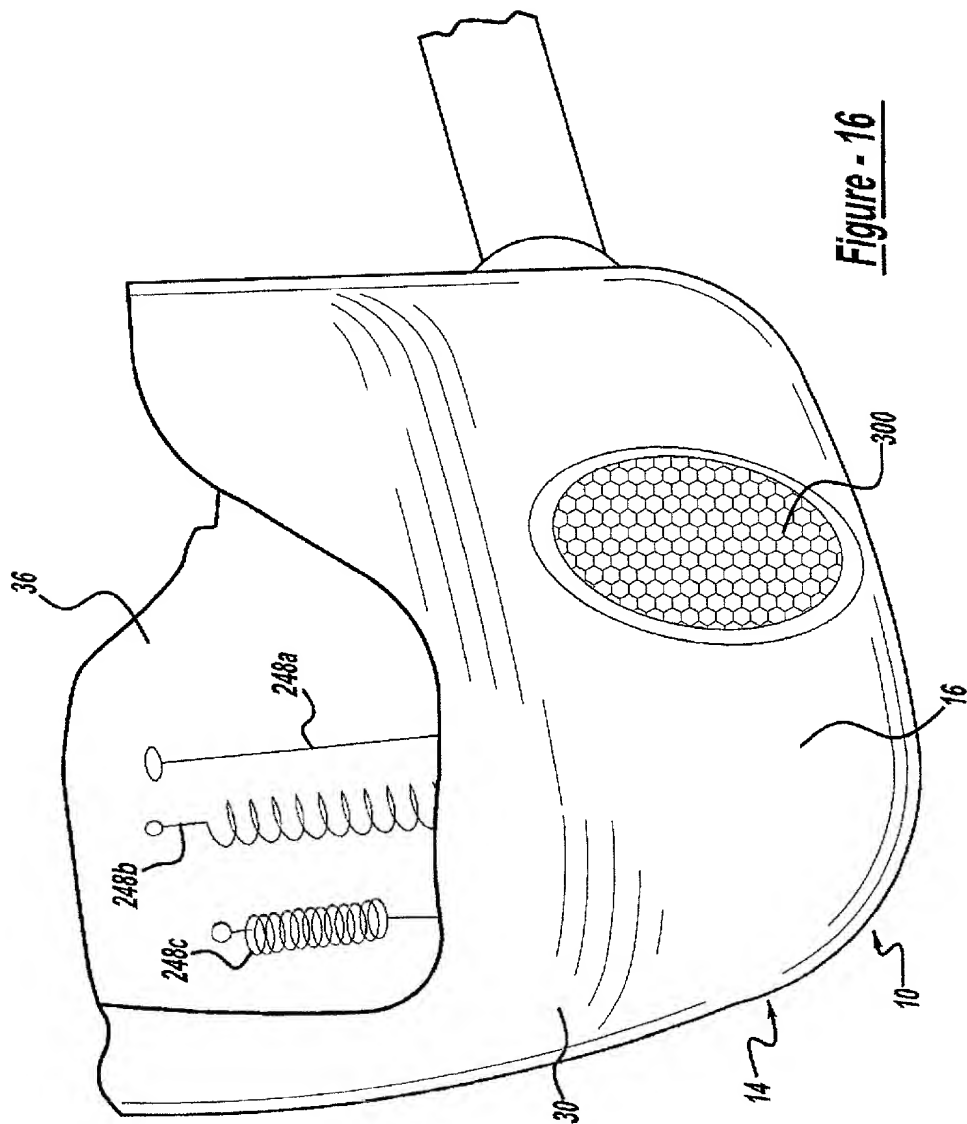


Figure - 16

**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**"EXTERIOR MIRROR"**

the specification of which

☒ [ X ] is attached hereto.

☐ [ ] was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by an amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application or to the patentability of the invention claimed therein in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

**PRIOR FOREIGN APPLICATION(S)**

Priority Claim

_____ (Number)	_____ (Country)	_____ (Day/Month/Year filed)	<u>Yes</u>	<u>No</u>
_____ (Number)	_____ (Country)	_____ (Day/Month/Year filed)	<u>Yes</u>	<u>No</u>
_____ (Number)	_____ (Country)	_____ (Day/Month/Year filed)	<u>Yes</u>	<u>No</u>

006707-38416360



## DECLARATION AND POWER OF ATTORNEY

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States Provisional application(s) listed below:

### PRIOR PROVISIONAL APPLICATIONS

<u>60/160,390</u>	<u>October 19, 1999</u>
(Application Serial Number)	(Month/Day/Year filed)
_____	_____
(Application Serial Number)	(Month/Day/Year filed)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status – patented, pending, abandoned
_____	_____	_____
_____	_____	_____

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint **Thomas F. Quinn, Jr.**, Reg. No. 35988, and **Philip R. Warn**, Reg. No. 32775, my attorney with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. I request the Patent and Trademark Office to direct all correspondence and telephone calls relative to this application to Warn IP Law Office, P.O. Box 70098, Rochester Hills, Michigan 48307, telephone number (248) 627-1133.

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